All the logs record passing through severe storms of thunder and lightning, rain, and wind. Balloon No. 1 apparently experienced the first of the storm at 11:15 p. m., although lightning had been visible for an hour and a half. Balloon No. 2 makes no mention of the storm until 3:30 a. m.; balloon No. 3 mentions rain at 2:40 a. m., and No. 4 entered the storm at about the same time. Some of the notes recorded by the aeronauts will serve to show briefly the very violent state of the atmosphere:

Balloon No. 1 at 11:25: "10 miles west of Ute. In terrific whirlwind. Very bad time. Basket straight out. Lightning close above and all around." and 15 minutes later, "Soaking wet and cold." At 2 a. m.: "Very bumpy wind; basket swaying; rain; lightning in all directions."

Balloon No. 2 at 3:30 a. m.: "In thunder and lightning storm; rain drove balloon down and drag-rope touched several times but basket did not. Decided to ride it out. Very high winds." At 8:30 a. m.: "Valving down before another approaching thunderstorm; will not land but ride it out low as before."

Balloon No. 3 at 3 a. m.: "In severe electrical storm; raining."

Balloon No. 4 at 2:45 a. m.: "Have entered thunderstorm; lightning on all sides." At 3:48 a. m.: "Landed. * * * Terrible rain and lightning."

Table of altitudes and directions.

Time.	Balloon No. 1		2		3		4	
	Altitude (feet).	Moving toward.	Altitude (feet).	Moving toward.	Altitude (feet).	Moving toward.	Altitude (feet).	Moving toward.
10 p. m.	900	NNE.	2,450	NNE.	2,000	NE.	2,300	NNE.
11 p. m.	1,400	N.	2,100	NNE.	2,000	NE.	2,500	NE.
12 m.	1,800	N.	2,100	NNE.	1,500	NE.	2,650	NE.
1 a. m.	2,500	NNE.	3,000	NNE.	2,000	NE.	2,650	NE.
2 a. m.	2,700	NE.	3,300	NE.	2,000	NE.	3,300	NE.
3 a. m.	3,000	NE.	3,600	NNE.	6,000	NE.	3,800	N.
4 a. m.	1,300	NE.	3,800	(1)	6,000	(1)	.....	.....
5 a. m.	1,400	(1)	4,000	(1)	2,800	(1)	.....	.....
6 a. m.	5,000	S.	1,400	SSE.	3,100	SW.	.....	.....
7 a. m.	5,200	E.	1,800	SE.	1,800	SW.	.....	.....
8 a. m.	5,200	E.	4,300	E.	800	SW.	.....	.....
9 a. m.	6,800	NE.	1,700	ENE.	2,000	E.	.....	.....
10 a. m.	7,500	ENE.	7,150	E.	2,000	SE.	.....	.....
11 a. m.	4,500	E.	3,700	E.	2,200	NE.	.....	.....
12 m.	500	ENE.	.....	.....	800	N.	.....	.....
1 p. m.	9,000	ENE.	.....	.....	2,000	N.	.....	.....

[1] Balloons lost in clouds.

In order to discover, if possible, any uniformity in the changes of wind direction at various altitudes, the preceding table was compiled from the logs for each balloon for each hour of flight, showing the altitude of the balloon and the direction of the wind. It must be remembered that the direction of motion is often slightly in error, owing to the fact that it is determined only by the judgment of the observer; and if it happens, as it did in this case, that points of reference are not readily distinguishable, it is possible that the error might be very large.

Classifying the wind directions by altitudes and time, we find that the reason for the unfortunate conduct of the balloons is to be found in the fact that they were all affected by a wind shift line in the southern half of the cyclone. This line seemed to pass the balloons in the early morning, for up to that time all directions were, in general, toward the northeast—that is, a southwest wind. After that time the directions are, in general, toward the southeast or east—that is, a northwest or west wind. Of course, there are isolated discrepancies, but these are obviously due to local phenomena, such as whirlwinds or eddies, or to the personal equation of the observer.

While these flights were not made with any intention of being of scientific nature, nor even were there any hopes of records being established with balloons of so small capacity, we are able, nevertheless, to gather quite vividly from the experiences of these men the extent of the unrest and turbulence which must attend the life of a thunderstorm.

HEIGHT AT WHICH SOUNDS CAN BE HEARD.

In one of his journals Camille Flammarion gives the heights at which sounds from the earth are heard from balloons. The shout of a man was heard distinctly at a height of 1,600 feet, the sharp note of a mole-cricket at 2,500 feet, and the croaking of frogs in a morass at 3,000 feet. At 3,255 feet a man's voice and the rolling of a cart were distinguished; at 4,550 feet the roll of a drum and the music of an orchestra; at 5,000 feet the crowing of a cock, the sound of a church bell, and sometimes the shouting of men and women. Nine hundred feet higher still was heard the report of a musket and the barking of a dog. The noise of a railway tram penetrated to a height of 8,200 feet, and the whistle of a locomotive engine to nearly 10,000 feet.—*Scientific Amer., July 27, 1918, p. 63.*